Remarks

The abstract has been amended to overcome the objection. Claims 1 to 6 and 28 were rejected under Section 103(a) over Jain et al. in view of Nakagawa. Jain et al. relates to a seamless projection lithography system that eliminates the need for masks through the use of a programmable Spatial Light Modulator (SLM) with parallel processing power. Nakagawa relates to an image forming apparatus for exposing, printing photographic film image onto photographic paper – which has an optical modulation device which changes the tone conversion rate of a liquid crystal layer in correspondence with the intensity of a writing beam impinging upon a photoconductive layer and which has a reflector providing image light. In the portion of Nakagawa referenced by the Examiner, Col. 10, lines 52-62, and Fig. 2, a system is described in which the impedance of a liquid crystal 79 is modified by an electric field, to generate an electro-optic effect, and modulate the light made incident from the reading side of the device. An electric field corresponding to the distribution of light intensity due to the change in impedance is provided by a drive unit. Application of light from the writing side of the device, lowers the impedance of a photoconductive film in correspondence with the light intensity. Unlike the device of claim 1, the illumination pattern in Nakagawa is not "superimposed on an electrode," and does not "control the assembly and lateral motion of said colloidal particles, said assembly and lateral motion being induced by the AC voltage applied between said electrodes." Although there are two ITO electrodes described in Nakagawa (labeled 65 and 67 in Fig. 2), their impedance is not affected by the light (rather the impedance of a liquid crystal is affected, to generate an electro-optic effect). Also, there is no mention in Nakagawa that the field is AC, as in the claim. Moreover, it is not understood how or why the lithography system of Jain et al. would or could be combined with the image forming apparatus of Nakagawa.

In rejecting claim 7 (some recitations of which have been combined with claim 1) the Examiner alleges that Datta discloses a substrate with electrodes and a gap filled with electrolyte. Datta relates to through-mask electroetching of a metal film on top of an insulating substrate, the shape of the metal film being etched is a function of the mask

opening, the spacing between the openings and the thickness of the mask. The Examiner relies on a section of Datta at col. 12, lines 5-34, as disclosing "a substrate with electrodes and gap filled with electrolyte." In the etching process of Datta, as described at col. 12, an electrolyte is used to etch a substrate, by filling an interelectrode gap with the electrolyte. Metal is removed in one pass.

In addition to the fact that Datta relates to electroetching and that there is no motivation for combining it with the lithography system of Jain et al. or with the image forming apparatus of Nakagawa, the electrolyte in Datta does not contain "suspended colloidal particles," and there is no mention of "controlling the assembly and lateral motion of said colloidal particles," as required in claim 1. Accordingly, the subject matter of claim 1 is clearly nonobvious.

Turning to the rejection of claim 28, Jain et al. and Nakagawa do not mention or suggest a device where "upon illumination by light of pre-selected spectral composition of the ***electrode*** surface or surface coating, a physical or chemical property of the surface or surface coating is altered in accordance with the illumination pattern ..." As noted above, although there are two ITC electrodes described in Nakagawa (labeled 65 and 67 in Fig. 2), their impedance is not affected by light (rather the impedance of a liquid crystal is affected, to generate an electro-optic effect). The Examiner has not alleged otherwise. Accordingly, this rejection should also be withdrawn.

Turning to the Section 103(a) rejection of claim 15 (over Jain et al. in view of Nakagawa and Datta) the Examiner states that it would have been obvious to provide the substrate of "Datta to Jain in order to avoid the contact resistance problems as taught by Datta ..." It is not understood how the problems addressed in cols. 1 and 2 of Datta, which explain the benefits of etching a metal-coated substrate with electrochemical machining (using an electrolyte and dissolving the metal into the electrolyte on applying a current) could or would be applied to the lithography system of Jain et al. or the image forming apparatus of Nakagawa. In Datta, it states that the advantage of the electrochemical machining process (with electrolyte) over chemical etching is that it is faster, less dangerous and less polluting (col. 2 at lines 34-36). It is not understood how this could motivate use of electrolyes with the systems in Jain et al. or Nakagawa, where there is no etching of metal taking place. Moreover, claim 15 requires "colloidal particles

suspended in the electrolyte solution," and this is not disclosed or suggested in Datta or elsewhere.

The Examiner also rejected claims 29-31 under Section 103(a) over Jain et al. in view of Nakagawa and further in view of Walt et al. Walt et al. relates to a fiber-optic device for viewing microspheres (beads) which are embedded into wells etched into the ends of the fibers in the fiber bundles. At col. 12, lines 35 to 45, anisotropic etching of the ends of the fibers, with an appropriate solution, is described. At col. 12 lines 60 to col. 13, line 33, Walt et al. discuss fixing the microspheres in the wells with various means, including a solvent for the microspheres, or using a coating on the beads to hold them in place, or swelling the beads to hold them in place in the wells. Col. 15, lines 1-23 does not mention etching of the substrate, but rather describes how the microsheres can be stimulated with different wavelengths of light (provided they have been initially labeled to so respond) to generate distinct optical signatures, to thereby indicate, in an assay, the presence of certain compounds or analytes. Accordingly, there is no mention or suggestion in Walt et al. or elsewhere of "upon illumination by light of pre-selected spectral composition of the electrode surface or surface coating, a physical or chemical property of the surface or surface coating is altered in accordance with the illumination pattern..." as in claim 28, or otherwise any mention of using illumination with chemical etching to alter the properties of an electrode surface (*i.e.*, "whereby the chemically patterned surface or surface coating is generated following illumination" as in claim 29). There is also no mention or suggestion of "subsequent functionalization, following illumination, of the surface by chemical reaction" as in claim 30. Accordingly, the subject matter of dependent claims 29-31 are nonobvious because they depend on allowable claim 28, and for these further reasons.

In conclusion, all claims are in condition for allowance and such action is earnestly sought.

Respectfully Submitted,

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